AMERICAN VETERINARY REVIEW,

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EDITORIAL.

"BE GENTLEMEN."—National peculiarities in closing curriculums of medical and veterinary schools—Commencement exercises—their preparations—students take the burden of them—college officers reserve but one part—selection of the *orator*—this is the hardest of all—our opportunities to hear many of them—now a treat, often a disappointment—Prof. McEachran's, of Montreal Veterinary College—its superiority and proper application—full of wisdom and very *apropos*—an excellent method of elevating the profession—admirable advice conveyed in few words—"Be gentlemen; live, talk and dress as such"—the part of the address as given to the graduates of the Department of Comparative Medicine of McGill University (Montreal Veterinary College).

"BE GENTLEMEN."—The educational institutions of every nation have their peculiar methods of testifying their interest in the occurrence of the periodical events which form the waymarks of the student life of their matriculates, and especially when the point has been reached which marks the completion of their term of devotion to the scholastic curriculum which they have been employed in mastering. Thus, on this continent, as in some parts of Europe, the commencement exercises form events of the most anxious anticipation, the more particularly as the necessary preparations for the occasion must be completed at a time when lectures, hard studies, and the final rigid examinations are scarcely over.

These commencement ceremonies and the *eclat* of their brilliant performance become, therefore, an object of absorbing interest, and impose the necessity of much hard work on the part of the organizing and managing parties. There is

always so much remaining to be done at the end of a term, so many ends to keep up, so many contigencies to be provided for, and such unsuspected obstacles to be overcome. If it is not the printing of the invitations, then it may be the arrangement of the programme, or the selection of the music, or the details of the rehearsals, and so on and so on. Of course the work is portioned out among many, but in a majority of colleges the principal part of the labor falls upon the students, who, under the stimulus of excited anticipation, are willing to work like beavers until the instant when they shall mount the platform to receive their potential parchment, which converts them into wise men. They are rightly and fully resolved that nothing in the whole affair shall be less than first class, and in any event as good, if not a better conceived and executed performance than that of any preceding year.

There is, however, a part which the officers of the college may, and usually do reserve to themselves. This is the selection of the Orator (capital O) for the occasion.

At length both the day and the hour have come (the rising of the sun on that morning having been unaccountably unattended by any sensible perturbation,) and to the accompaniment of delicious and inspiring music, surrounded by their friends, and laden with fragrant and blushing bouquets, and proud of their valedictorian, who has accomplished his task admirably, indeed, just a little better than was expected of him, they prepare themselves to listen to *the* orator of the occasion. This, in our mind, is the moment of the evening, and on this feature of the programme very often rests the success of one of these fetes.

It has been a part of our professional and perfunctory experience and duty to listen to various addresses delivered to graduates, and many of these have contributed to our enjoyment of an hour of most agreeable and profitable occupation while they lasted. Again, however, we have sometimes been seriously disappointed in our expectations. But we have recently received a copy of an address which, in our estimation, is the most appropriate and well-conceived of any to which we have had the pleasure of listening, and was delivered by Prof.

McEachran before the graduates of the Veterinary Department of McGill University, Montreal. We reprint "from the *University Gazette*" that portion of the address which was directed principally to the graduates. The advice which is embodied in the words of our friend McEachran, and the good counsel contained in his suggestions, is such that not only young graduates in Montreal, but graduates in all parts of the world, and even older post-graduates, will do well to heed, and no one can be better qualified to impress his listeners with the wisdom of his remarks when he enjoins them "*In all things be gentlemen—live as gentlemen, talk as gentlemen, and dress as gentlemen.*" There are more ways than one to elevate a profession, and Professor McEachran has established an opening in the veterinary curriculum which veterinary schools of the day will do well to adopt and improve.

ADDRESS DELIVERED TO THE GRADUATES IN COMPARATIVE MEDICINE AT McGILL UNIVERSITY, BY DR. McEACHRAN, DEAN OF THE FACULTY.

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Gentlemen,—You have now completed the curriculum prescribed for you, and have been admitted to the degree of Doctor of Veterinary Science. This you have gained after a hard course of study, and having passed most searching written and oral tests, by independent examiners appointed by the Government, as well as the examinations prescribed by the University.

Presumably, therefore, you are qualified to practice; I believe you to be so. Your examiners declare you so, this great University announces you so. Now, gentlemen, do not imagine this memorable day in your lives is to mark the end of your studies; by no means.

During your pupilage you have had but little time to familiarize yourselves with the literature of your profession other than your text-books. It will now be your duty to do so. To keep pace with the rapidly-evolving science of Medicine, you must be constant readers of scientific journals and new

publications, not alone those directly bearing on your own particular profession of science, but on all collateral subjects. There is no profession which requires in its members so varied a store of general knowledge as does yours.

In the daily walks of life you will come in contact with all classes of society, and all degrees of rank and station. You will be expected to have a general knowledge more or less extensive, and be expected to engage in intelligent conversation on almost every conceivable subject which happens to be of particular interest to each special client. Thus, the advanced farmer leads you into discussions on "Silos," on feeding standards, the relative merits of this or that breed of cattle, horses, sheep or swine. The sporting man imagines that you should know all winners and pedigrees of noted horses. The politician expects you to be thoroughly conversant with the bills before the House, and will be surprised if you admit that you do not wade through Hansard regularly.

It is your duty, therefore, to be a student of everything around you; be observant, and gather information from every source possible. Make it a habit, on every occasion when you are asked for information which you cannot impart from want of knowledge, note it down, and go to your library and inform yourselves of it for future use. So in your practice acquire a habit of noting cases, record every case of more than passing interest, and study the subject carefully, read every available standard author on it, and in the light of knowledge so obtained, applied to the case under observation, you will soon become masters of your profession.

Never miss an opportunity of making a post-mortem examination; nothing aids a man so much in making a correct diagnosis as the repeated corrections and errors disclosed by a post-mortem examination. Never waste a pathological specimen; think how much good others may gain who succeed you as students of comparative medicine, from even one specimen, accompanied by a carefully recorded history. Museum specimens, accompanied by histories, are of great service in illustrating didactic lectures.

In your practice acquire the habit of careful clinical inspec-

tion, and ever remember that your patients, though dumb, are in all things like as we are—they hear, see, feel, smell, taste, suffer pain, and enjoy pleasureable emotions just as we do. Deal with them in the full consciousness of these facts. Do not frighten them either by voice or look, never cause even the slightest pain that you can prevent, and never nauseate them by nauseous medical compounds such as you would consider barbarous in a doctor to prescribe for yourself.

In surgical operations, don't forget the sentient nerves which ramify every part of the body, employ every means in your power to lessen the suffering in necessary operations; too little use is made of the valuable discoveries applied to lessen human suffering; local and general anæsthetics.

In your fees be moderate—by no means undervalue your professional services—but be satisfied with fair, moderate charges.

Acquire prompt business habits, keep engagements punctu ally; nothing drives friends and clients away as quickly as inattention to engagements.

Collect your accounts regularly, pay your own debts promptly, and avoid debt as you would a quicksand.

Gentlemen, in going out into the great world, do not suppose that you will not have to meet with opposition and discouragements—for you shall; but meet them manfully; and let me assure you, that with your scientific attainments, and by unimpeachable conduct, by industry, sobriety, and fair dealing with all men, you need have no fear for the future.

The importance of your profession is daily becoming more and more understood; if you fail, blame not your profession, but blame yourselves, and never forget that, under no circumstances, can your profession disgrace you—but you may disgrace your profession.

Choose for your companions those only who are enlightened and refined; let your reading and your conversation always be elevating in character.

In all things be gentlemen; live as gentlemen, talk as gentlemen, and dress like gentlemen.

Much more might profitable be said on your duty to your-

selves, to your clients, to your profession, and to your Alma Mater, but time forbids.

In conclusion, therefore, gentlemen, on behalf of your teachers who, we trust, you will consider your lifelong friends, I say to you "God-speed;" we send you forth into a wide field of scientific usefulness, in which we trust some of you, at least, will become eminent and successful men, honored and respected by your fellows and confreres. We will watch your progress as fathers do their children, and never forget that we look to you, who are the first University graduates of this Faculty, to uphold the reputation of your Faculty, and this great University, of which it forms a minor part.

In the name of the Faculty, I beg to tender our thanks to the Provincial Government for their liberality in continuing to give us the annual grant, and to the Hon. Acting Commissioner of Agriculture, for taking the trouble to honor us with his presence to-day; to those gentlemen who constitute the Board of Examiners, who have traveled long distances in order to assist us, and to this great assembly, for your patience in listening to these remarks.

ORIGINAL ARTICLES.

THE INSPECTION OF MEAT AND MILK WITH SPECIAL REFERENCE TO TUBERCULOSIS.*

By A. W. Clement, V.S., of Baltimore.

(*Continued from page* 86.)

At the meeting of the International Veterinary Congress held at Paris in September, 1889, under the presidency of M. Chauveau, after thorough discussion of the question of meat inspection, the following conclusions were reached.

"1.—The consumption by men and animals of meat from tuberculous animals should be prohibited, whatever may be the extent of the tuberculosis, and whatever may be the apparent quality of the meat.

*Read at a special meeting of the Maryland State Veterinary Medical Society, January 23, 1890.

"2.—The proprieter should be indemnified if the animals seized are cattle or hogs.

"3.—It should be possible to place meat for sale only after it has been recommended as healthy by a veterinary inspection service.

"4.—The suppression of private slaughter houses is recommended, and their replacement by public abattoirs.

"5.—The veterinary inspection of the animals intended for slaughter should be made before and after death.

"6.—It is not necessary that a municipal decree should designate the causes which should influence the seizure of the meat.

"7.—The introduction of foreign meats into the community without a previous practical examination by the veterinary inspector, or under his control, should not be allowed.

"8—All meats should be stamped before leaving the abattoir, including those which are destined for the soldiers."

At the twenty-sixth annual meeting of the United States Veterinary Medical Association, held at Brooklyn, N. Y., September 17th, 1889, the following resolutions were unanimously passed:

"*Whereas*, We, the members of the United States Veterinary Medical Association, being sensible of the prevalence of bovine tuberculosis in the United States, particularly in the dairy stock of the Eastern States, it being computed that at least 10 to 15 per cent. are so affected in one form or another, and being satisfied of its infectious and contagious character and of its identity with tuberculosis, or consumption in the human family, and that it can be conveyed to others both by inoculation and ingestion, believing that a large percentage of this disease in mankind can be traced to this source;

"*Resolved*, That we strongly condemn the use of the milk or flesh of animals so affected in any form, as an article of diet.

"2.—*Resolved*, That this Association urgently protests against the employment of empirics as meat or dairy inspectors; that such duties should be confined to duly qualified veterinarians having a comprehensive knowledge of comparative pathology.

"3.—*Resolved*, That the inspection of meat can be properly conducted only at the abattoirs.

"4.—*Resolved*, That all dairies should be periodically visited, the cows carefully examed and their condition reported upon to the local authorities.

"5.—*Resolved*, That a committee of three be appointed by the Chair to place these resolutions before the Secretary of Agriculture, so that national measures may be adopted by which this disease can be placed under the same category as contagious pleuro-pneumonia, and to be similiarly dealt with."

Now, it is probable that no such complete system of inspection as is carried out in some European cities can be inaugurated in this country, at least at the present time. Nevertheless, some parts and modifications of that system should be adopted. If the meat supply is to be controlled, however, the inspection must be made before and after death, and the killing must be witnessed, to determine the existence or absence of disease. It is impossible to tell by simply looking at a piece of meat whether it is healthy or diseased. Or at any rate this could not be done without such time and appliances as would render the inspection impracticable. When we see professional men, and men of prominence too, go into court and swear that a certain piece of meat is unfit for food; and as many more of equal prominence swear in the opposite direction, as was the case reported a short time since in Scotland, we feel that considerable responsibility rests upon the expert, who wishes to do his duty to the public, and who does not desire to bring reproach upon his profession. Of course there are certain cases in which a piece of meat can be pronounced unfit for human food, as for instance, where tuberculous nodules are present, or in certain parasitic diseases, such as the larval state of the human tapeworm.

To make inspection anything like a guarantee of safety and to do this at a reasonable expense to the community, centralization of the slaughtering is absolutely necessary. Any other method of killing is a disgrace to the city. Many of our slaughter-houses are in as unsanitary a condition as they can well be. If the city of Baltimore would compel the butchers

to kill at some central abattoir, or at most in two abattoirs, half the difficulty of inspection would be overcome.

Tuberculosis is not by any means the only disease which may be transmitted to the human family through the meat supply. Lack of time, however, prevents me from more than touching upon some of them. Actinomycosis, a tumor-like affection found upon the jaws of cattle and sometimes in the throat, lungs and tissues, often met with in the muscles of hogs on microscopic examination, is seen also occasionally in man. The infectious nature of this disease has been proven, as well as its identity in men and animals.

Trichinosis is a parasitic disease more or less common in pigs, where the worm, of microscopic dimensions, is found curled up in the muscle. If not thoroughly cooked, the pork which contains trichinæ is liable to affect the person who eats it.

Tapeworm, a very common disease, can only be produced by the ingestion of partially cooked beef and pork, which harbors it in its immature form. Of 1,037 hogs examined in Montreal by Dr. Osler and myself, 76 were infested with the cysticercus cellulosæ, or immature form of the tænia solium, one of the most common tapeworms found in man. Circulars sent at this time to the physicians of the city revealed the fact that at that time no less than 200 persons were suffering from this disease.

Whatever may be the difference of opinion as to the probability of infection by the meat supply, no such difference of opinion exists as to the milk supply. Tubercle bacilli have been demonstrated in the milk from tuberculous cows, even when there were no lesions in the udder. Such milk is no doubt to blame for much of the tuberculosis seen in young children. Many diseases in children other than tuberculosis are oftentimes referable to milk. To control the milk supply, the cows from which it comes must be under some sort of supervision. Just how to do it with the best guarantee of safety, and with the least expense, is a matter to be determined upon. Perhaps some such system as the licensing of the dairies would solve the matter. Whatever may be determined upon, it is certain that this question must sooner or later demand the considerate attention of the public.

From the fact that the public is so much dependent upon the health of the animals which supply it with food and milk, for its comfort and well-being, should not the veterinary profession be accorded representation in both the city and State Boards of Health?

Much that pertains to the proper sanitary inspection of milk and of meat requires the special knowledge and training of the veterinarian. This is recognized in those European cities which possess the most enlightened and efficient Boards of Health. If those in authority, and the public generally, will inform themselves thoroughly concerning the sources of danger to public health, some of which have been pointed out in this paper, they cannot fail to be convinced of the necessity of taking suitable action to guard against these dangers.

DISCUSSION.

Dr. Wm. H. Welch said that the demonstration that tuberculosis is an infectious disease produced by a specific microorganism which has been isolated in pure culture justifies us in ranking this disease, at least theoretically, among the preventable diseases. We may indeed be appalled in instituting preventive measures at the apparent hopelessness of our efforts in view of the enormous prevalence of tuberculosis in man and animals, and in view of the wide distribution and great vital resistance of the tubercle bacillus. Nevertheless, these difficulties should not prevent us from adopting all available means to check the spread of the most devastating of human maladies.

The most common, although not the sole, sources of tuberculous infection appear to be the dust from dried tuberculous sputum and the milk from tuberculous cows. Doubtless, at least for adults, the danger is greater from tuberculous sputum than from milk. Since however, it has been abundantly demonstrated that the milk of tuberculous cows, even when the udder is free from gross lesions, is capable of conveying tuberculous infection in not a small proportion of cases we must regard the milk of tuberculous cows as dangerous and to be rejected for food.

We have not equally satisfactory proof as to the conveyance of tuberculosis by the flesh of tuberculous cattle. On the one hand, as regards the flesh, there are only a few positive experimental results against a large number of negative ones, and even in the positive cases there is not sufficient evidence that the possibility of accidental contamination of the flesh has been avoided, and on the other hand, we know that muscular tissue is not a favorable soil for the development of tubercle bacilli. The question as to the use of meat from cattle affected with localized tuberculosis is one of great economic importance. The positive statements of veterinary and tuberculosis congresses as to the rejection of the flesh of tuberculous cattle and the views expressed in popular and alarmist articles on this point are not at present warranted by our knowledge of the facts. Nevertheless, we have a right to consider the possibility of accidental contamination of the meat in the process of slaughtering tuberculous animals, and also the natural repugnance against the consumption of the flesh of diseased animals. It is better to wait for further investigation before taking a decided position on this question. This does not, however, lessen the importance of proper sanitary inspection of slaughtered animals, for there are many diseases besides tuberculosis that can be conveyed by the use of diseased meat.

There should be no differences of opinion as to the desirability of the measures of inspection of food advocated by Dr. Clement. Public health demands that such sanitary inspection be adopted. It is clear that no efficient inspection of the meat supply can be secured until the law forbids the slaughtering of cattle, swine and sheep in a multitude of private establishments. It is absolutely essential that the reform should begin with the establishment of one or two abattoirs where alone it is permitted to slaughter the animals named. This measure, like many others for the public good, is inimical to certain private interests, and here lies the only opposition to it. As soon as the public is sufficiently informed as to the good which will be accomplished by the sanitary inspection of the meat supply, it is certain that these private interests will not

prevail and that this community will adopt the only policy which can commend itself to an enlightened people.

Dr. Wm. T. Councilman, of Johns Hopkins Hospital, said that the anatomical study of the tuberculous lesions throws much light on the manner in which infection takes place. While there is no doubt that in the great majority of cases the sputum is the source of infection by the inhalation of the tubercle bacilli, set free by drying, the first source of the disease being then found in the lungs, there are many cases in which the infection comes from the alimentary canal. Though in such cases infection by sputum cannot be excluded, for the bacilli from it may get on food or other objects which are placed in the mouth, we know that we have in tuberculous milk and probably in flesh a much readier source of infection. We are so accustomed to regard tuberculosis as a disease of the lungs that we lose sight of the great number of other than lung lesions which are produced by the bacilli. Almost all chronic enlargements of glands, the chronic joint diseases, etc., are tuberculous, and for most of these, infection takes place through the alimentary canal.

All inspection of meat, dairy cattle, etc., should be made by an expert who has had a long experience in studying the comparative pathology of the disease. For, although the disease is the same in man and animals, and the lesions produced by it agree in their general features, the characteristics of the tissues and the manner of infection and spread of the disease in the different animals, produce such apparent differences in the lesions that they might readily be mistaken by one not an expert in such matters. Such an inspection of meat as Dr. Clement has pointed out would not be possible except with the abattoir system. While there is every reason, both sanitary and economic, that we should have such an inspection of meat and milk, there is no ground on which it can be opposed.

We are so accustomed to tuberculosis, it is so much with us that we have come to accept it as a matter of fate and do not lift our hands in an attempt to mitigate its ravages. While it would, no doubt, be impossible to exclude all the sources of infection, still, many of them can be.

Dr. James A Steuart, City Health Commissioner, said the subject has been so thoroughly exhausted by the very able and instructive paper read by Dr. A. W. Clement, as well as by the clear and logical views presented by Professors Welch and Councilman, that there is nothing left for me to say in this connection, except that I have been both pleased and interested, and that my views on this subject are in thorough accord with those expressed here to-night.

I feel called upon, however, to say briefly, as Health Commissioner of Baltimore, that I have for the past ten years, in season and out of season, advocated and urged the passage of a law creating Inspectors of Food, especially of meat and milk, by the State or the city of Baltimore. It goes without saying that none should be thought of for a moment, for such a position, but one thoroughly qualified and equipped for the difficult duties of such an office, by all the necessary technical knowledge and experience essential for the efficient performance of the work. In regard to the establishment of an abattoir for the city of Baltimore, I have struggled in vain for the past fifteen years. Long since I became convinced that private slaughter houses could *not* be properly regulated by city ordinances, and in fact were from the very nature of things an unmitigated nuisance, no matter where situated, within the city limits or upon the suburbs.

I have labored to convince the butcher that his best interests would be subserved through the abattoir, but all in vain up to the present time. I do not despair, however, and shall continue my efforts in this direction in spite of all opposition.

The importance to the community of wholesome food, as well as the abatement of the private slaughter house nuisance, are too great to be outweighed by opposing difficulties. I shall be glad to co-operate with the committee you propose to appoint, and charged with the difficult task of proposing a law to be presented to the Legislature, together with an appeal for its enactment.

Mr. T. Wallis Blackistone, who had been invited to be present for the purpose of discussing the subject from a legal standpoint, said that while legislation had provided for the

establishment of no less than three sanitary boards, to wit: the State Board of Health, of which Dr. C. W. Chancellor is the Secretary and executive officer; the Baltimore City Health Department, of which Dr. James A. Steuart is the head; and the State Live Stock Sanitary Board, consisting of three Commissioners, "who are practically engaged in the breeding of live stock," with Dr. William H. Wray as Chief Veterinary Inspector, it is apparent from an examination of the various Acts of Assembly and ordinances of the Mayor and City Council, from which these boards derive their powers, that our laws are at present wholly inadequate to protect us from the dangers so vividly pointed out by Dr. Clement. And this, although the powers conferred and the discretion given to their officers are, in some matters, so broad as to be almost arbitrary.

The City Health Commissioner may "fence in and guard by sentinels" any infected house or district in the city of Baltimore; he may quarantine individuals, houses or localities; he may destroy household effects, or cause them to be disinfected; and he may abate nuisances—with very wide discretion as to what constitutes a nuisance—and for this purpose may invoke the aid of the courts. He may cause the water of any suspected pump or spring to be analyzed and, if found impure, prohibit its use.

Kindred powers and like obligations are conferred upon the State Board of Health, to be exercised and performed all over the State.

The Live Stock Sanitary Board is charged with the duty of protecting the health of domestic animals from "exotic, contagious or infectious diseases," and to this end may quarantine or cause infected animals to be destroyed.

It will be seen from this brief statement of the law, that the efforts of the Legislature have been directed mainly, so far as the functions of these boards are concerned, to the prevention of the spread of disease by contact or communication with diseased subjects.

It would seem that our law-givers never had in contemplation the possibility or the danger of the communication of

disease to the human family by infected meat or milk used for food. Certain it is, that they have nowhere provided such a supervision over our food supplies, as in the instances of these two most important items, can only be made effective by a systematic inspection, conducted by skillful and scientific men, whose professional education and experience has fitted them for this particular work. To be sure, under the head of "Markets," in the City Code, there are two sections, imposing fines of twenty dollars, respectively, for selling unsound meat or milk from diseased cows. The enforcement of this, like the other provisions of the law relating to the markets, is left with the clerk of the market. How far the scientific and professional attainments of that officer enable him to detect and prevent the sale of the meat or milk of an animal with tuberculosis, I leave others to determine.

I have only to add that I think the suggestions made by Dr. Clement would provide an adequate remedy for the evils under discussion. One, if not both, of the Boards of Health should include a competent veterinarian, whose duties should be especially directed to the inspection of our meat and milk food supplies. The inspection of meat should be made before and after death, and to enable this to be done, the places for the slaughtering of animals for food should be reduced to as few as possible, by the establishment of one or more abattoirs.

Dr. George C. Faville, V. S., then said:—Mr. President, the importance of this question can scarcely be overestimated. The fearful ravages of tuberculosis in the human family is known to all. In our work of inspection in the Bureau of Animal Industry we keep a pretty careful record of the inspection of cows in searching for contagious pleuro-pneu monia.

I find from our records that of 163 stables supplying milk to this city, containing 2,160 cows, that over 10 per cent. of them show well-marked evidence of tuberculosis. I wish to introduce the following resolutions for the consideration of this meeting:

Whereas, It has been proven that the unboiled milk of tuberculous cows, whether or not the udder is tuberculous, is

capable of causing tuberculous infection in individuals consuming the milk;

Whereas, There is reason to believe that the consumption of uncooked or partly cooked meat from tuberculous cattle is likewise capable in some instances of causing tuberculosis;

Whereas, The number of tuberculous cows is large, probably in this community not less than 10 per cent. of the entire number, and in many herds much higher;

Whereas, There are various other affections of animals communicable to man, such as trichinosis, actinomycosis, tapeworm, etc.;

Whereas, There are various recognized abuses sometimes connected with the milk sold,

Resolved, In view of the manifest dangers from these sources to the consumers of meat and milk, that some suitable inspection of the meat and milk should be adopted.

Resolved, That a proper inspection of the meat involves one, or at the most two central slaughtering houses where alone it is permitted to slaughter cattle, swine and sheep to be sold for food,—a provision recognized as essential by all competent authorities, and already adopted in most large European cities.

Resolved, That a proper control of the milk supply of the city involves a periodical inspection of the cows in the dairies furnishing the milk.

Resolved, That the State and City Boards of Health, in order to carry out proper systems of inspection of meat and milk supplied for food, should avail themselves of the special knowledge and training of the veterinarian, and

Resolved, That a copy of these resolutions be sent to each branch of the Legislature of the State and to the Mayor and City Council of Baltimore.

At the conclusion of these remarks, Drs. Wm. H. Welch and James A. Steuart were added to the present Committee on Legislation, which consists of Drs. Geo. C. Faville, A. W. Clement and Wm. Dougherty.

MILK FROM TUBERCULOUS COWS.

HOW FAR MAY A COW BE TUBERCULOUS BEFORE HER MILK BECOMES DANGEROUS AS AN ARTICLE OF FOOD?*

By HAROLD C. ERNST, A.M., M.D., of Boston.

The change of opinion in regard to the infectious nature of tuberculosis has been very marked in the last few years, not among the scientists, but among the people at large. Of course the medical world has, as a rule, accepted the conclusions to be drawn from Villemin's work of twenty-five years ago, and the discovery of the specific cause of the disease by Koch has only added strength to the theories advanced in certain quarters before that time.

The change of opinion spoken of is, after all, hardly a change, but, more properly, an acceptance of the knowledge gained in regard to the disease by the more recent and exact methods of research, and a much wider diffusion of that knowledge. More and more is it the rule that the knowledge of the transmissibility of tuberculosis by means of infected material is recognized among those whom it concerns the most, and nothing but good can come from the diffusion of that knowledge.

It is hardly too much to say that proper methods of management of tuberculosis, both in human beings and in animals, involve more important interests—pecuniary as well as vital—than any other subject that engages the attention of medical men. It is well known that one-seventh of the human race, approximately, perish from this disease, and when we acknowledge to ourselves, as a fair review of the evidence at hand must force us to do, that most, if not all, of this loss is preventable, our duty is plain before us. That is, never to cease speaking of it, never to give up trying to reconcile the money interests of man with his own welfare, and to do all in our power, by the collection of clinical and experimental evidence, to make the case complete.

The work showing the etiological relationship of the bacil-

* From the Hatch Experiment Station, Bulletin No. 8.

lus of tuberculosis to the disease was, to all intents and purposes, complete upon the publication of Koch's monograph upon the subject. Nothing more in the way of proof was actually needed, and, indeed, very little has been furnished. At the same time, confirmatory evidence was demanded by some who had, and many who had not, access to the original details, and this confirmatory evidence has been furnished in such overwhelming amount, that it is to-day but a waste of time to repeat, what is accepted the scientific world over, that in the organism described by Koch we have the specific cause of this pathological change, and that without its activity we do not have tuberculosis in any form or under any conditions.

An imperfect understanding of the nature of bacteria in general, and of this organism in particular, has led to many attempts to arrest the pulmonary form of the disease it produces, by therapeutic measures, most of which would have been seen to be useless at the outset, if a knowledge of the problem had been complete. It is not upon drugs or mechanical means that our reliance should be placed in attempting to stamp out this scourge of civilized man. Our attention must be turned in the direction of proper preventive measures, and until the necessity for this is impressed upon physicians in general, and by them upon the people at large, so that the preventive measures suggested after mature deliberation will be complied with, but little can be effected, and the knowledge gathered after so much hard labor must be considered as wasted, for the time being.

In order to the suggestions upon which the stamping out of tuberculosis must depend, there is necessary a large amount of investigation into the methods by which it spreads and by which the virus is carried from person to person. Among these methods are undoubtedly the excreta—more especially the sputum—from persons affected with the disease; the excreta are carelessly treated and scattered broadcast, to the injury of persons susceptible but not previously affected. The methods of distribution in this way, and the behavior of the bacillus of tuberculosis outside of the body, have been well and recently treated by Cornet (*Zeit. f. Hyg.*, Bd. v. S. 191, 1888).

Other methods of distribution are of importance, however, and until within a few years have not received attention from the medical profession at all commensurate with their value. These methods of infection are those arising from the ingestion of food materials coming from the domestic animals, especially the flesh and milk of cattle.

In Koch's *Etiology of Tuberculosis* he uses the following expressions:

"Since by far the greatest number of cases of tuberculosis begin in the lungs, it is to be supposed that the infection in all these cases has taken place in the manner just suggested—by the inhalation of phthisic sputum dried and made into dust. The second principal source for the tubercle-bacilli, viz., tuberculosis of the domestic animals, appears not to have anything like the importance of the phthisic sputum. The animals, as is well known, produce no sputum, so that during their life no tubercle-bacilli get from them into the outer world by means of the respiratory passages. Also in the excrement of tuberculous animals the bacilli appear to be only exceptionally present. On the contrary, it is a fact that the milk of tuberculous animals can cause infection.

"With the exception of this one way, therefore (*i. e.*, through milk) the tuberculous virus can only have effect after the death of the animal, and can only cause infection by the eating of the meat. The same conditions hold for the milk of cows suffering from 'perlsucht.' Before all things, if infection is to take place, it is necessary that the milk contain tubercle-bacilli; but this appears to be the case only when the milk-glands themselves are affected with the disease. This explains at once the contradictions in the statements of various authors, who have made feeding experiments with the milk of cows suffering from 'perlsucht.' If infection from tuberculous animals does not appear to be frequent, it must by no means be underrated."

This caution is one which was necessary at the time it was written, and its repetition is as necessary now as ever. What conclusions may be reached in regard to its *extreme* importance, are well shown by the statistics collected and presented

by Dr. Brush before the New York Academy of Medicine, on April 29, 1889 (*Boston Med. and Surg. Journal*, CXX. p. 467 *et seq.*). In this paper the author states that after several years of close study of the affection, including a consideration of all accessible statistics, and the habits of the people among whom it prevails, he has arrived at the conclusion that the only constantly associated factor is found in the in-bred bovine species. If a community was closely connected with in-bred dairy cattle, tuberculosis prevailed, and, *vice versa*, if there were no in-bred dairy cattle there was no tuberculosis. In the discussion following this paper many objections were raised. Dr. Brush went on to say that he believed that the disease was originally derived from the bovine species. He did not believe that less than fifty per cent. of all dairy cattle were affected by it, while the statistics he had quoted showed that wherever there was a race of people without cattle phthisis was unknown. He believed, furthermore, that if all the cattle in this country were to be killed, the disease would finally die out entirely here.

Such statements as these are a revelation to the generality of practitioners, and may seem to be somewhat forced, but they certainly indicate, together with the statistics upon which they are based, the existence of a greater danger than has been fairly realized. That the danger from the consumption of milk coming from cows affected with tuberculosis has been understood by individuals at least, and that, too, before the announcement of Koch's discovery, is very well shown by extracts from a letter which I take the liberty of quoting here. The gentleman writing it is a veterinarian in practice in Providence, R. I., and the observations were made and the advice given more than ten years ago. That portion of his letter bearing upon the subject in hand is as follows:

"Mr. W., June 15, 1878, called me to see a white and red cow. Coughs and is short of breath and wheezes. Pulse 60; respiration 14, and heavy at the flanks; temperature 104°. Diminished resonance of right lung, but increased in part of the same. Emphysematous crackling over left lung and dullness on percussion. Diagnosed a case of tuberculosis and advised the destruction of the animal.

"Dec. 12. Cow in a cold rain a few days ago for about two hours. Milk still more diminished than at a visit made on September 25. Again advised the destruction of the cow. Family still using the milk. Respiration 20; pulse 85; temperature 104.6°.

"February 22, 1879. Temperature 104.8°; respiration 26; pulse 68. Losing flesh fast. Milk still in small quantities. Advised, as before, to destroy the animal and *not to use milk*.

"May 30. Called in a hurry to see cow. Is now as poor as could be. No milk for a week. Pulse 80; respiration 40; temperature 106°. The cow died in about three hours. Autopsy made fourteen hours after death: Lungs infiltrated with tuberculous deposit. Weight of thoracic viscera 43.5 pounds. Tuberculous deposits found in the mediastinum, in the muscular tissues, and in the mesentery, spleen, kidneys, udder, intestines, pleura, and one deposit on the tongue. The inside of the trachea was covered with small tubercles.

"In August, 1879, the baby was taken sick, and died in about seven weeks. On post-mortem of the child there was found meningeal tuberculosis—deposits all over the coverings of the brain and some in the lung.

"In 1881 a child, about three years old, died with, as it was called, tuberculous bronchitis. And in 1886, a boy, nine years old, who for three or four years had been delicate, died with consumption—'quick,' as it was called.

"So far as known, the family on both sides have never before had any trouble of the kind, and the parents were both rugged and healthy people, and so were the grandparents—one now being alive and sixty-eight years old, and the other died at seventy-eight."

Of course there is much room for criticism, if these cases be quoted as carrying out an exact clinical experiment, and no one can say that the occurrence of the three deaths in the same family was anything more than a coincidence. At the same time it must be acknowledged that they offer very solid suggestions for consideration, and that the light thrown upon the disease by the investigations of recent years makes the ad-

vice of the veterinarian to "kill the cow and stop using the milk" much more sound than it appeared to the minds of the medical gentlemen who "laughed" at him at the time it was given.

It is my hope within the coming year to collect a series of clinical observations which will be of interest and some service in elucidating the question of how many cases of tuberculosis occur which produce suspicion in the minds of medical or veterinary attendants of having an origin in the milk from infectious cows.

It is upon this question of possible danger from the domestic animals—especially cattle—that much recent work has been done, but the subject has been by no means exhausted.

If there is danger to human beings from the widespread existence of tuberculosis among cattle, some sort of restrictive measures must be taken, by means of which this danger can be lessened. At the same time legislation calling for so much pecuniary loss as would be the case if the present supply of tuberculous cattle were to be destroyed, can only be asked for with a backing of as much carefully gathered scientific evidence as can be obtained, and it is the part of preventive medicine and the experimental method to furnish some of this evidence.

Through the liberality and broad-mindedness of an association of gentlemen in Boston, it is possible to present the results of certain experiments undertaken to determine the question which is expressed in the title of this paper. "How far may a cow be tuberculous before her milk becomes dangerous as an article of food?" is an extremely important point to decide. If it be considered already settled and Koch's dictum be accepted, that there is no danger in the milk, if the mammary glands be not affected, then there remains only for the veterinary surgeon to determine the existence of such lesions, and restrictive measures can go no further. If, however, the milk from cows with no visible lesion of the lacteal tract be shown to contain the specific virus of the disease in a not inconsiderable number of cases, and if this milk be shown to possess the power of producing the tuberculous process

upon inoculation in small quantities and in feeding experiments carried out with every possible precaution, then restrictive measures must have a far wider scope, and be carried on from an entirely different standpoint than has heretofore been considered necessary.

It is familiar to most of us that little importance has been attached to this question—the danger of milk from tuberculous cows with no lesions of the udder—for the reason that many experiments have been made with negative results, and because *a priori* reasoning would seem to indicate the absence of such danger; because tuberculosis is not a disease like anthrax, in which the specific poison is to be found in all parts of the system and is carried from one place to another by the blood-stream. Koch's assertion that the milk from cows affected with tuberculosis is dangerous only when the udder is involved, appears to be based upon theoretical considerations rather than practical work in this special direction. It has been widely accepted, however, and the weight of his name has caused the assertion to be repeated many times with but few attempts to verify its correctness.

The increased attention that has been paid to the disease among cattle, and the suspicions that have been aroused that tuberculosis among the domestic animals is a more frequent cause of its appearance among men than has been supposed, have made a careful investigation of this point imperatively necessary. With the exception of a few successful experiments by Bollinger (*Deutsch. Zeit. f. Thiermed.*, Bd. XIV. S. 264) and Bang (*Ibid.*, Bd. 11, S. 45, 1885), no evidence of great value is to be adduced. These authors, as well as Tschokke (quoted by Bollinger), bring out isolated cases showing successful inoculation experiments with the milk from tuberculous cows with no disease of the udders, but the experiments are so few in number that they cannot be accepted as furnishing more than a probability, and extremely critical persons might be justified in ascribing the results to contamination.

Bang (*Congres pour l'etude de la Tuberculose*, 1, p. 70, 1888) gives new results. Examining twenty-one cases of cows affected with general tuberculosis but with no signs of disease

in the udder, he found but two whose milk showed virulent qualities upon inoculation in rabbits. He concludes that since the cows experimented with were in advanced stages of the disease and yet showed such slight virulent properties in their milk, the danger from cows in less advanced stages is much less. And this conclusion he thinks is borne out by experiments with milk drawn from eight women affected with tuberculosis; specimens were used from all for inoculation and none were found to be virulent. He draws the conclusion, therefore, that it is not necessary to consider all milk dangerous coming from tuberculous cows, but that it should always be *suspected*, because no one can say when the udder will be diseased, and because, without this, the milk from tuberculous cows contains the virus in rare cases.

I shall endeavor to show that it is not at all rare for such milk to contain the virus.

Galtier also (*loc. cit.*, p. 81) has given the result of certain experiments with milk coming from tuberculous cows, but he says that "certain experimenters claim to have established the virulence of milk coming from animals whose udders appeared to be normal and free from any lesions; the greater number, and I am one of them, have merely encountered a virulence in milk after the udder had become tuberculous. However, as a beginning tuberculosis of the udder is an extremely difficult thing to recognize, especially during the life of the animal, the milk should be considered dangerous which comes from any animal affected, or suspected of being affected, with tuberculosis."

I shall endeavor to show that this view of the case is justified by something more than probabilities.

In the *Deutsch. Arch. fur klin. Med.*, Bd. xliv. S. 500, Hirschberger reports the results of an experimental research upon the infectiousness of the milk of tuberculous cows, in which—following out Bollinger's work—he attempts to settle, 1st, whether the cases are rare in which tuberculous cows give an infectious milk; and 2d, whether the milk is infectious only in cows with general tuberculosis, or whether it is also infectious when the disease is localized. He made the trials

of the infected milk by injection into the abdominal cavity of guinea-pigs with the usual precautions. His results were as follows:

1. Milk was used five times from cows affected with a high degree of general tuberculosis in all the organs.

2. Milk was used six times from cows with only a moderate degree of disease.

3. Milk was used nine times from cows in which the disease was localized in the lung.

From these twenty cases the milk was proven to be infectious in eleven. The percentage of positive results in the animals when arranged in accordance with the three groups above given was 80 per cent. in the first group (milk from cows in a very advanced stage of the disease), 66 per cent. in the second group, and 33 per cent. in the third. He found the bacilli in only one of the specimens of the milk, and considers that this, therefore, shows that the inoculation experiments are the more certain guide as to whether the milk is infectious or not.

These results are extremely interesting, although they do not lay as much stress as do mine upon the presence or absence of lesions of the lacteal tract.

The experiments which I am able to report* have been made possible by the liberality of the Massachusetts Society for Promoting Agriculture, which became interested in the question some time ago, and has put it in my power to carry them on. They have given everything in the way of pecuniary and moral support that the work has required; my own part has been that of general director, and I have had associated with me during the whole time the Society's veterinarian, Austin Peters, D.V.S. For the last year I have also had the very valuable aid of Dr. Henry Jackson and Langdon Frothingham, M.D.V.

All of the inoculation experiments and most of the microscopic work have been done in the bacteriological laboratory

*The full notes of these experiments will be found in the Transactions of the Association of American Physicians, vol. iv., 1889.

of the Harvard Medical School, some of the microscopic work at the Society's laboratory in Boston, whilst the feeding experiments have been done and the experimental animals have been kept at a farm in the country devoted to this especial purpose, and situated among the healthiest possible surroundings. Nothing has been set down as the result of microscopic observation that I have not myself verified, and every portion of the work has been carried out under the most exacting conditions, and with every possible precaution against contamination.

Before the farm buildings were used at all they were thoroughly cleaned from top to bottom. Every portion of old manure was carted away, as well as all the old earth. The whole of the woodwork was scrubbed and then washed with corrosive sublimate solution (1 : 1000) and finally whitewashed, and every care was taken to secure good drainage and free ventilation. The result and effectiveness of all this have been best demonstrated by the fact that every animal brought to the place made a most marked improvement in its general condition, while some of them even went so far as to appear to get well.

In deciding whether the milk from any cow affected with tuberculosis is dangerous, when the udder shows no lesion, the first point is to see whether the milk contains the infectious principle or not. In this case, of course, that infectious principle is the bacillus of tuberculosis, and attention was turned to that for some time. The observations have been carried on over a long space of time, and were made as follows: The milk was taken from the cow in the morning—or evening, as the case might be—the udders and teats having just been thoroughly cleaned. The receptacle was an Erlenmeyer flask, stoppered with cotton-wool and thoroughly sterilized by heat. The specimen was taken at once to the laboratory, there placed in conical glasses, with ground-glass covers—the whole of these having been carefully cleansed beforehand—and then allowed to stand in a clean refrigerator for twenty-four to forty-eight hours, and sometimes for seventy-two hours.

At the end of that time from ten to twenty cover-glass preparations were made from various parts of the milk or cream. These were stained after Ehrlich's twenty-four hour method, with fuchsin and methyline blue as a contrast color, and then searched with an immersion lens.

We prepared for examination in the way spoken of above, one hundred and seventeen sets of cover glasses from as many different samples of milk. Of these specimens three spoiled, *i. e.*, turned sour or acid before the examination was completed, and must be rejected, leaving, therefore, one hundred and fourteen samples of milk of which the examination was completed. These samples were obtained from thirty-six different cows, all of them presenting more or less distinct signs of tuberculosis of the lungs or elsewhere, but none of them having marked signs of disease of the udder of any kind.

Of these samples of milk there were found *seventeen* in which the bacilli of tuberculosis were distinctly present; that is to say, the *actual virus was seen in* 10+ per cent. of the samples examined (17: 114=10+). These seventeen samples of infectious milk came from ten different cows, showing a per centage of *detected* infectiousness of 27.7 per cent. (10: 36= 27.7). These results are exceedingly interesting, it seems to me, and I confess I am surprised at the size of the percentage named. Not because I had not expected to find the bacilli—I have been convinced for several years that persistent search would show their presence in such cases as those that are here recorded—but because the amount of dilution to which the organisms must be subjected diminished immensely the chance of their being found at all. In no case have they been seen in large numbers, but equally in no case has a diagnosis been made where there was the slightest doubt of the appearance under the microscope.

The large number of cases in which these organisms have been found seem to me to indicate their presence in a still greater proportion of cases, if only a sufficiently thorough examination of all the milk could be made. This of course is out of the question, but the results here given seem to establish, beyond a doubt, the fact that milk coming from cows

with no definite lesion of the udder may contain the infectious principle of tuberculosis, if the disease be present in other portions of the body of the animal. Also, that this presence of the infectious principle is not merely a scientific *possibility* but an actual *probability*, which we should be thoroughly aware of and alive to.

Other interesting facts shown are these: that the cream after rising is quite as likely to be infectious as the milk, because the bacilli were found in the milk nine times after the cream had risen, and in the cream eight times after it had separated from the milk.

In regard to the constancy of the occurrence of the bacilli in the milk, in two of the ten cows in whose milk the bacilli were found, but one sample of the milk was examined; and the bacilli were found in one sample out of several examined at different times, in two cases. In the remaining six cows, bacilli were found two or more times in different samples of milk. So that, as far as they go, these results seem to indicate that the bacilli are present with a fair degree of constancy. At the same time it should not be surprising if one examination was successful and others failed, because of the chances against success, owing to dilution, which were spoken of above.

In nine of the seventeen cases the time of the milking and the portion of the milk used were noted; that is to say, a sample was taken from the first of the milking, or the last of the milking, and then cover glasses made from the milk or cream. In these cases bacilli were found in the cream three times, and in the milk four times, from the first of the milking; in samples from the last of the milking, in the cream no times and in the milk four times; and this too seems to show an interesting point, viz., that the bacilli, if present at all in the udder, are not washed out entirely by the first manipulations of the teats, but may be supposedly present in any portion of the milk. The converse is also indicated, that the manipulation of the udder in the process of milking does not express the bacilli from the tissue into the latter portion of the milk, but that, as before, they may be supposed to be pretty evenly

distributed in all parts of the udder if they be present at all.

Before going on to consider the results of the inoculation experiments made with various specimens of milk, it may be well to glance at the condition of the cows that have been under our control from the time of the beginning of the experiments until they were killed, or until the date of preparing this paper.

The history of each cow, as far as we have been able to secure it, bears out our assertion—as far as the examinations have gone, that none of the udders were affected with tuberculosis—certainly so far as gross appearances were concerned. This was true also, in the microscopic appearance of every case but one (No. 6, Cow F). In this case the gross appearances in the udder were healthy, except that one quarter seemed to be slightly fibrous, and there were one or two yellow spots which were seen to be made up of fat under the microscope. With a low power lens only a slight increase of fibrous tissue was observable, and the oil-immersion was put on merely as a matter of routine. One giant cell was discovered, containing a number of bacilli, but a careful search failed to show any others, or any signs of change, except the increase of fibrous tissue as noted above. So that the assertion is still true, that we have failed to discover any signs of tuberculosis that were easily recognizable in any of the cows here recorded, and these include all we have had under close observation.

Those from which milk was used for inoculations that are not here given had no signs that permitted of even a probable diagnosis by skilled veterinarians.

We also made an interesting series of experimental inoculations in rabbits and guinea pigs with milk or cream from various cows, in varying quantities and at different times. Of rabbits there were used fifty-seven animals. Of these, five were inoculated with milk which had turned sour, two died of intercurrent diseases in a few days (coccidium oviforme), and of one the material was lost before the microscopic examination was completed—so that eight animals are to be rejected, leaving forty-nine upon which the results can be based.

Out of these, five were made more or less tuberculous, as proven by microscopic examination, and in forty-four the results were negative—that is to say, we obtained 5 : 49, or 10.2 per cent. of successes out of all inoculations in rabbits.

There were used thirty-three different specimens from thirteen different cows—that is, there were 23 per cent. (3 : 13) successful results from the cows used, and 15.15 per cent. (5 : 33) successful results fram the specimens used.

Positive results were obtained from

Cow P twice (at different times).

Cow L once.

Saunders cow twice (at different times).

The results of the inoculations of guinea-pigs are more striking. There were sixty-five animals used in all. Of these, nine were inoculated with sour milk or cream, and two died in a day or two of other diseases (peritonitis and pleurisy). There are, therefore, but fifty-four that should be counted. In them there were twelve positive results, or 28.57 per cent. (12 : 42) successes out of all the inoculations. There were used thirty-two specimens from fourteen different cows, and the successful results came from six different cows—that is, 42.8 per cent. (6 : 14) of the cows were shown in this way to have infectious milk, and 37.5 per cent (12 : 32) of the specimens used were shown to have active infectious properties.

Positive results were obtained from

Cow P (three times in two different inoculations).

Cow D (three times in three different inoculations).

Cow F once.

Slocum cow once.

Saunders cow once.

Mayhew cow (three times in two different inoculations).

The combining of the results obtained from both rabbits and guinea-pigs shows the following: Successful results were obtained in milk from cow P three times (two different specimens) in guinea-pigs, and twice in rabbits (two different specimens;) from cow L once in rabbits; from cow O three times (three different specimens) in guinea-pigs; from cow F once in guinea-pigs; from the Slocum cow once in guinea-pigs; from

the Saunders cow once in guinea-pigs, and twice in rabbits (two different specimens); and from the Mayhew cow three times in guinea-pigs (two different specimens)—that is to say, out of fourteen cows used the milk was shown to be infectious in seven, or 50 per cent. by inoculation experiments.

An interesting fact is also shown, and that is, that bacilli were found in the milk or cream, and successful inoculation experimens made in animals with the same specimen in five different cases (including eight of the successful ones) as follows:

Comparism of the dates when Bacilli were found in the Milk and the same Milk was used for successful inoculation experiments.

Cow.	POSITIVE. Cover-glass.	POSITIVE. Guinea-pig.	POSITIVE. Rabbit.
P.	Cream, A. M.	Cream, A. M., March 9, 1889.	Cream, A. M., March 9, 1889.
	Cream, P. M.	Cream, P. M., March 9, 1889.	Cream, P. M., March 9, 1889
		Cream, P. M., March 9, 1889.	
O.	1st of milking, cream, March 9, 1889.	First of milking, cream, March 9, 1889.	
Slocum.	Last of milking.	Last of milking. June 10, 1889.	
Mayhew.	Last of milking, milk,	Last of milking, milk. June 21, 1889.	

The inoculation experiments above detailed seem to me to be deserving of consideration because they were done under the most careful precautions that could be devised. In all cases the experiment animals were kept under observation long enough to determine, so far as could be seen, that they were in good health, and after the inoculations they were separated and kept under close watch, but in healthy surroundings. Some of those that were used were inoculated immediately after purchase, because of a scarcity of the supply at the farm, and were not in good condition. But as no sign of tuberculosis appeared in any of these, their ill health cannot come in as a disturbing factor in the results.

The results obtained from certain feeding experiments with calves show that there were thirteen calves used, and fed for varying lengths of time with milk from cows affected with tuberculosis, but not of the udder. Of these, the material was thrown away from one before the microscopic examination, and this should be rejected in the final results. Of the remainder, there were five positive results obtained and one suspicious. The latter is counted as negative, for the reason that, although giant cells and granulation tissue were seen, no

bacilli were found. There were, therefore, five out of twelve positive results, or 41.66 per cent. It should also be said that of those counted as negative three sets of specimens were suspicious, but were hastily examined for the purpose of this paper, so that a more careful search will very probably increase the percentage of successes.

In the series of feeding experiments on one set of pigs, the milk being given to them from the same cows as before, there were seven pigs used in all, from one litter and healthy parents. Of these, examination showed negative results in two, positive results in two, one was subjected to a very hasty microscopic examination, and the material from two was thrown away—a mistake, as was shown by the results of the microscopic examination of the material from No. 3. There are to be counted, therefore, only five, giving as successful results 40 per cent.

By the cover-glass examinations we have shown that the milk contains infectious material in ten cows out of thirty-five, from which the milk was examined for bacilli—that is, in 28.57 per cent. We have also shown that the milk was infectious, by inoculation experiments, in seven out of fourteen of the cows from which the milk came—that is, 50 per cent. And we have shown the infectious nature of the milk by ocular demonstration and successful inoculation from the same specimens in five cows out of fourteen used—or, 35.7 per cent.

These results are, to a certain extent, preliminary—that is to say, they are but part of the work upon this subject which is being done under the auspices of the Massachusetts Society for the Promotion of Agriculture. The work will not be completed, at any rate, until next year.

They show, however:

1st, and emphatically, that the milk from cows affected with tuberculosis in any part of the body may contain the virus of the disease.

2d. That the virus is present whether there is disease of the udder or not.

3d. That there is no ground for the assertion that there must be a lesion of the udder before the milk can contain the infection of tuberculosis.

4th. That, on the contrary, the bacilli of tuberculosis are present and active in a very large proportion of cases in the milk of cows affected with tuberbulosis but with no discoverable lesion of the udder.

ENTERITIS IN CATTLE CAUSED BY EATING CORN-STALK FODDER.*

By Dr. G. H. Going, State Veterinarian.

Mr. Chairman and Gentlemen: By request of Hon. Martin Mohler, Secretary of the State Board of Agriculture for Kansas, I have prepared a statement of what, in my opinion, is the cause of the mortality among cattle, when turned out to feed in the corn-stalk pasture. That death is caused by acute inflammation of the stomach and intestines, is of course quite plain. I have made a number of post-mortem examinations on cattle after dying as above mentioned, after being allowed to feed to repletion upon corn-stalks, and the symptoms presented are invariably the same, viz.: extensive inflammation of the alimentary canal and coverings of the brain. When cattle are first turned into a corn-stalk pasture they feed voraciously, regardless of the disastrous consequences that so frequently follow engorgement with this coarse, dry and almost indigestible food. But as this disease is not of a contagious or infective nature, I am not permitted at the expense of the State to go and personally investigate the symptoms, course and termination of cases reported to me by farmers whose stock suffer. Therefore I can only advise by letter, giving treatment that I have found most successful in cases both of this nature among my own cattle and those I have been called upon to treat in my capacity as a private practitioner, before I entered the service of the State.

The character of the food, and the habits and condition of the animal, operate as direct causes of the disease of the alimentary canal. Very rich and concentrated food taken in undue quantity, or very innutritious substances, such as overripe straw or hay, or corn-stalks, which being composed al-

*Read before the Kansas State Board of Agriculture.

most entirely of woody fiber and silicon, will cause enteritis. This effect is due more to the action of these substances as foreign bodies, which are not subject to the digestive action of the secretions of the mouth, stomach and bowels, than to the want of other elements necessary to life and the perpetuation of health. The digestive function failing to perform its work, the contents of the stomach and bowels become a cause of severe inflammation in which nature's recuperative powers too often prove unequal to the emergency; especially is this the case where cattle are not thoroughly habituated to the use of unwholesome food. I am fully convinced that the whole cause of the trouble in the cases where cattle die after being turned out among corn-stalks to feed, is due to the indigestibility and the large quantity of food ingested.

My personal experience while in the cattle business was that by allowing the cattle to remain only one hour a day among the stalks until their stomachs became accustomed to the work required of them, and allowing plenty of pure water, no cattle were lost. After being handled in this way for about ten days, I consider it safe to turn them permanently out among the stalks.

When cattle are allowed to engorge themselves with unmasticated and only partly masticated food, especially when it is of a coarse, cellulose character, it becomes impacted in the paunch (rumen, first stomach), or maniply (third stomach), or both. The animal is then unable to regurgitate the contents for the second and final mastication, which is the cud chewing process. As a consequence, this body of compressed material, acting like a thorn in the flesh, creates an inflam mation, which, without timely and proper medical treatment, results in fatal termination. This inflammation upon the mucous membrane of the stomach extends from contiguity of tissues to the muscular coats, and then on to the intestines, and finally to the peritoneum, setting up a peritonitis involving the entire contents of the abdominal cavity. This extensive and severe inflammation is sufficient to involve by sympathy the membrance of the brain, and the unmistakable symptoms of meningitis are observed. The affection is usually followed

soon by relief in death. Corn-stalks that are damaged by mould or rot, or contaminated by smut, should not under any circumstances be fed to stock, unless to prevent starvation—when no proper, wholesome food could be procured. In my opinion most of the losses incurred by death from indigestion originating in cattle which are allowed to have free access to corn-stalk fodder, could be entirely avoided by handling the stock as follows:

First—Before turning them into the stalk pasture, see that they start in on pretty full stomachs, of food which they are accustomed to eating; then they cannot possibly over-eat the first time; then allow them to remain in the stalk pasture for about an hour each day thereafter, gradually increasing the time, as before stated. This gives the stomach time to become accustomed to this kind of food. You can then safely allow the stock to run among the corn-stalks at will. Never lose sight of the fact that a constant and full supply of pure water is absolutely necessary for the well-being of cattle while kept upon this class of food.

Notwithstanding the high mortality among cattle affected with indigestion due to impaction, treatment is not always to no purpose, and we can only feel that we have used all the knowledge that we possess in attempting to alleviate or ease the dumb animal's suffering.

The rational treatment of all diseases is to remove the cause of the morbid conditions, and in the case under discussion tc remove the indigestible mass from the stomach, is indicated. For this purpose I have found the following mixture to be very successful: Linseed oil, 1 quart; croton oil, 20 drops; molasses, 1 pint; ginger tincture, 2 ounces. Mix well, and give as one dose to each animal. Of course, this is a dose for an adult. Half the dose would be suitable for a one-year-old animal, and so on according to age. If this be unsuccessful in producing a copious discharge from the bowels inside of twenty-four hours, repeat the dose. The sooner this treatment is adopted in the early stage of the disease, the more likely is recovery to follow. As soon as the stomach and bowels are thoroughly cleaned by the action of the purgative

medicine given, administer the following daily to each animal under treatment: Common salt, 4 ounces; nit. potash, half ounce: bi-carb. soda, 1 ounce; syrup, 1 pint; water, 1 quart; mix well, and drench. Three days will be quite sufficient to keep up this treatment. At all times during treatment allow free access to be had by the sick stock to water. Injections are often used with good effect, as follows: Warm water, 4 quarts; 1 ounce soap (dissolved), 1 ounce pure glycerine; mix well, and give by syringe per rectum. Give sloppy food afterwards for some days, such as bran mash, boiled carrots or cabbage, etc.

If the case does not yield to this course of treatment, there is evidently such a degree of impaction that no medicine you can administer will have any effect. Then the only chance left is to cut into the stomach through the abdominal wall and to remove the contents by hand. This, of course, can be done, with any prospect of success, only by a skillful veterinary surgeon.

In cases where distention of the stomach by gas is present, the use of the trocar and canula will soon afford relief. Prevention should be the watchword of the stockowner, and if rationally pursued he will have little need to trouble much about the use of medicine or surgery for the disease under discussion.

THE VETERINARIAN AS A SANITARIAN.

By I. Newton Krowl, D.V.S.

It seems to me that the object of all branches of prophylactic treatment is unquestionably the grandest, the noblest and by far the most satisfactory aim of the medical scientist; the prevention of disease is one of the great absorbing problems of the present age; and the truth of the old but frequently quoted adage "an ounce of prevention is better than a pound of cure," is certainly becoming more and more forcibly demonstrated as the years of advancing civilization and luxury roll by. Crowded cities and other great centers of population, associated with the demands of a public almost beside itself, "intoxicated, as it were," with the ever increas-

ing wonderful discoveries of science in the rush of progress, that even vices often seem to become necessities in regard to food, clothing and homes.

The inevitable result of these possibly uncontrollable conditions, is for the masses to eagerly seek relief from the consequent evils, through the efficacy of practical hygiene; and where, may I ask, is there to be utilized a more practical test of the merits of sanitary medicine than that controlled by the veterinary science, the local practitioner of which can surely exemplify this fact with great credit to himself, his chosen profession, and with advantage to the community in which he resides. It is generally conceded by medical men everywhere, and at least apprehended by every thoughtful citizen, that, with at least few exceptions, disease is dependent upon the existence of specific organisms, ("developed through unconcern of the principles of hygiene") some forms positively contagious or infectious, others more or less so, but all are modified or aggravated in their depredations by the existing sanitary arrangements and discipline of a person, home, stable or locality.

The present extensive investigations, experiments and study of the etiology of certain diseases of the human family, in different parts of the world, will undoubtedly give to the public strong, perhaps conclusive evidence, that many maladies of the brute creation are communicable to man through different mediums, such as food and by his daily associations with the domesticated animals; consequently how intelligently vigilant every commonwealth should be in seeing to it that stock—all animals about them, either for food or service, are properly cared for; that the housing, feeding, handling, and the preparing for market the animal food products, is consistent with the rules of hygiene.

The veterinarian, the local practitioner in particular, has special and peculiar opportunities for education in the details of an efficient sanitary police, and can thereby assist in guarding the public against the infringements of the laws of health, which sometimes occur within his special line of service. Yes, the moral obligations of the veterinary practitioner are

imperative, and his knowledge and the results of his observations are certainly of vital importance to all boards of health, although, unfortunately for the people interested, in many instances his services are more or less ignored by many such boards. A limited amount of thought on the subject will assert the fact to all, that, in the public interest, as well as private, the management of the sanitary arrangements of the dairy and its products in all their details, the same of the abattoir or slaughter house, the butcher's stall, the food, the quality of feed, hay, oats, etc., and their honest measure, as well as the stimulation of the aims and discipline of the humane organizations, such as the Society for the Prevention of Cruelty to Animals, in a kindly and intelligent manner, are surely the veterinarian's responsibility.

Of course the benefits to be derived from the above will never be brought about by simple authority, coupled with the arbitrary arrogance and bullying of the average wearer of the badge of inspector, who in many instances is entirely ignorant of everything but the knowledge of the fact that he is an officer, and that he has a *pull in the ward*—no, it is impossible, for intelligent administration of sanitary medicine is successful only through firm, honest, considerate discipline, in which discrimination is indispensable, and patience is a virtue, in order to gain the good will of all concerned for the common good.

That incurable pest in the horse known as glanders would rarely become chronic, endangering the lives of all who come in contact with it or its surroundings, and a suspicious case of this horrible disease would not be concealed in the hope of curing the same, or criminally selling the animal, if all horse owners were more thoroughly convinced of the possibility of its inoculation in man as well as beast, and thanks to the recent labors of the Bureau of Animal Industry, apparatus has been discovered, the manipulations of which will give a more positive diagnosis of a suspected case of glanders.

I doubt that a single instance will ever be recorded, where a farmer or dairyman has permitted a case of suspected tuberculosis, (consumption) in a milch cow to be withheld from

examination; nor would they risk such a disease on their place, were the danger to the public and themselves properly and earnestly presented to them. Tuberculosis in the lower animals, especially in the case of milch cows, has certainly been demonstrated as one of the most insidious dangers to the health of man, and from recent investigations by veterinarians, its growth in our cities, both public and private, is becoming a very serious matter; and this fact, in connection with the thought that the Bureau of Animal Industry is to an alarming extent, handicapped in the control of this disease, was one of my strong reasons for writing these lines, for surely if tuberculosis in the lower animals is to be eradicated, controlled or modified, the local practitioner of veterinary medicine must do the work through the co-operation of the local boards of health, for in this disease it is not a question of quarantining an affected section, but to successfully cope with it, the affected cases must be ferreted out, through perhaps years of professional contact with the animals of a neighborhood.

Doctoring an afflicted horse, prescribing for a sick cow, or the nursing of a poor, broken down, chronically crippled cob, is only one side of the veterinary profession. But the bright side, that which every devoted, enthusiastic veterinary student longs to have presented in its proper light to the consideration of the people of the United States, is its sanitary side, which in Europe is recognized, and is undergoing continual development there, although a high standard of efficiency has already been attained, proving the importance of the veterinarian as a sanitarian, not only when under the jurisdiction and fostering care of a general government, for he is substantially esteemed and appreciated as of great value in the councils of local authorities, which is in fact the most important medium of government, through whose sanction and assistance he can attest himself a public benefactor of high order.

EXPERIMENTAL PATHOLOGY.

MECHANISM OF THE DEATH OF RABBITS FOLLOWING TRANSFUSION WITH THE BLOOD OF DOGS.

By G. Hayem.

Ch. Richet and Hericourt have been engaged in researches into the weak resistance of rabbits when injected with the blood of dogs. In examining into the mechanism of death when thus produced, it is seen that it takes place by asphyxia, resulting from the stoppage of the blood in the right heart, which is filled with cruorical concretions. It is in fact because the hematies of the rabbit are dissolved by the serum of the dog; there is destruction, *en masse*, of the red corpuscles, and it is evident that, in the rabbit at least, the blood in solution stimulates the formation of large thromboses. These facts belong to the order of those which the author has before described under the name of *concretions by precipitation*. These investigations of the effects of the mixture of the two kinds of blood will help to throw light upon the pathogeny of thrombosis and of embolisms of dyscrasic origin.—*Rev. de Sc. Med.*

ON A NEW TUBERCULOUS BACILLUS OF CATTLE.

By J. Courmont.

This differs much from the bacillus of Koch. It always kills rabbits and guinea pigs, and though found in the blood of the animals thus destroyed, does not, except in certain conditions, produce lesions of a tuberculous character. It may, however, give rise to similar deposits in one or several species of animals, remaining at the same time inert in respect to others. In one species it will always reproduce tubercles, if obtained from a tuberculous lesion, if taken from another culture, but will produce tubercles only at a certain epoch of its growth, age appearing to be one of the factors of this property.

The power of producing tubercles cannot be considered as a simple attenuation of its virulency, as the attenuated ba-

cillus can kill in fifty days, and have no lesions, while these may prove fatal in five days. This explains how a bacillus, which may easily be cultivated or colored, may be for some time overlooked, when regarded only from the point of view of the genesis of tuberculosis. In future, when the inoculation of a microbe obtained from a tubercle fails in its anticipated results in an animal of the same species, it will become necessary, before deciding on the qualities of the microbe, to test it by using it in the inoculation of one or more animals of other species and under different conditions of evolution.—*Ibid.*

UPON THE ETIOLOGY OF TETANUS.

By Chantemesse and Widal.

With a view to the experimental elucidation of the question of the endemic outbreaks occurring at times in hospitals, the authors inoculated guinea pigs with the dust of walls, curtains, bedding, floors, and other surroundings of the beds in which tetanic patients had died. Those in which the dust of walls, curtains and bedding were used have remained negative, while those made with the dust of the fissures of the floor have always produced tetatus on from the third to the fifth day. Similar results have been obtained with the scrapings of the internal surface of the uterus of a patient who had died of tetanus. Inoculations made with the organs of animals killed in these experiments, have also been negative; and those made with the fluid taken from the edges of the wounds were positive; but in reproducing the disease in series, it was observed that the inoculations become sterile towards the fourth or the fifth series.

The pus and serosity of the wounds contained, with others, the microbe of Nicolaier, but in cultivating this microbe on plates of serum, the culture have never given positive inoculations. The authors explain these facts by stating that the microbe of Nicolaier does not act alone, but that it needs a specially prepared soil and the presence of certain other microbes to become virulent; or that the culture in artificial media, while preserving its germinative faculty, has destroyed

its virulency. This theory is inferred from the following experiment: ground possessing a high degree of tetanic virulency becomes inoffensive when triturated and exposed during three days to the temperature and diffused light of the laboratory.—*Ibid.*

REPORTS OF CASES.

"*Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.*"—VETERINARY RECORD.

TWIN-ABORTION IN A MARE.

By C. E. HOLLINGSWORTH, V.S., La Salle, Ill.

Some time ago a peculiar case came under my notice, which may prove equally as interesting to others.

A mare belonging to a farmer living near here was bred in June (I have not exact dates) and all went well until November, when one morning they found a dead colt lying at her heels. He thought, of course, that it was "all up with her" for that year, but was surprised some time afterward to see unmistakable symptoms of her still being pregnant. This second fœtus was carried through almost the full period of gestation, when it, too, was aborted.

An M. D. said it occasionally happened in the human family, but this is the first I was aware it ever took place in the equine race. Heretofore my opinion had been that it was an impossibility in the mare to cast one and carry the other any great length of time.

EXTRACTS FROM FOREIGN PAPERS.

CONTAGIOUS PLEURO-PNEUMONIA IN A GOAT.

By PROFESSOR DESSART.

The case here described by the Professor was reported to him as having occurred in a barn where, out of six cows, two had been destroyed in consequence of an attack of pleuro-pneumonia. The goat was two years old, and when taken sick

had been stabling near the diseased cows. Her symptoms were a cough, with loss of appetite, and diminution of milk, and as the lungs seemed still to be sound, she was for the time put aside as a suspect only. A few days later, when the disease had rapidly progressed, the cough had increased, the breathing had become short and percussion of the chest revealed dullness on both sides of the lungs in the posterior half. She was then destroyed, and at the post-mortem the lungs were found hard and presenting a brownish-red coloration, the hepatized portions having the usual appearance of pleuro-pneumonic lungs except that the marbled condition was not quite so marked as in the lungs of pleuro-pneumonic cows This case is the first one recorded by the author, and taking into consideration the generally accepted theory of the mode of development of contagious pleuro-pneumonia, he advises great care in the application of the sanitary laws relating to pleuro-pneumonia, until new cases are reported which may justify the inclusion of caprine contagious pneumonia in the laws regulating the subject.—*Annales de Brux.*

ECLAMPSIA IN THE DOG.

By Professor Ad. Reul.

Referring to *eclampsia in the nursing bitch*, the author says; "a functional disease of the nervous system, it attacks the animal suddenly, one or two days after delivery, and has been observed in animals nearly at term and previous to parturition. There exists a great resemblance between eclampsia in the dog and the parturient apoplexy of cattle—a resemblance principally observable in a portion of its manifestations, affecting well bred and kept animals, as the black and tan and Yorkshire terriers, pugs and greyhounds; it is less common in other breeds. Primipares in good condition are mostly affected, and may have several attacks. Among its causes, exposure is one of the principal, but violent moral impressions have a serious influence, such as the loss of one or several pups, fright, anger, &c. The disease appears suddenly, the animal being first more or less nervous and agitated,

soon becoming paralyzed, lying on her side, panting, and screaming more or less loudly and painfully. The nose remains cool, and somewhat moist, the pulse becomes hard and accelerated, skin is dry and warm, and both the flow of milk and defecation and micturition cease. At times, at the beginning, the temper is affected, and the animal becomes ugly, cross and snappish, and possibly suspicions of rabies may be entertained. The progress of the disease is rapid, ending generally in the first twenty-four hours, either in death or recovery. The treatment recommended consists in bleeding from the saphena, the paw being well masséd to stimulate the flow of the blood, bags of ice or warm poultices on the head, glycerined rectal injections, friction over the vertebral column, and the administration, every half hour, of a tablespoonful of a potion made as follows: Sulphate of soda, 15 parts; nitrate of potassa, 5 parts; water, 80 parts; sulphuric ether, 20 parts. Mix.—*Annales de Bruxelles.*

SOCIETY MEETINGS.

NOTICE TO THE MEMBERS OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Association, to be held in Chicago September 16th and 17th, promise to be the most important meeting held by the Association for many years.

A paper entitled "Some Recent Researches in the Bacteriology of the Diseases of the Domesticated Animals," is now in preparation by Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, for this occasion. It will be illustrated by the use of the camera, and will prove rich food for thought for our members, and afford a wide field for discussion.

A second paper, by Professor R. S. Huidekoper, on the interesting topic of "Contraction of the Horse's Feet and Contracted Heels," illustrated by diagrams and models, will prove a source of enjoyment to all those who attend. From personal knowledge of the contents of this paper, the Secretary begs to state that this will prove one of the most complete contributions on this subject that has appeared during the past two years before an English-speaking body, inasmuch as it contains not only the views of the writer, but also a review of the theories and deductions offered during the past ten years by the most eminent writers in Europe.

A third paper is announced, from the pen of Prof. A. Liautard. Though the subject is not yet announced, we can rest assured—from our experience and relations with him, whose name has been identified with the whole work of our

Association since its birth, and with every movement of a public character that has had for its aim the elevation of the veterinary profession in America—that a rich treat is in store for us.

Announcements are already made of important matters that are to aid in making up the reports of several of the committees, and it will be of much importance for every member to be present, to take part in the discussion of these papers and to place himself on record in the outcome of the deliberations of the subjects now placed in our keeping.

The sub-committee of the Comitia Minora have now in contemplation the formation of a party to leave Boston on the 13th of September, New York on the 14th, and from there to visit Philadelphia, Baltimore and Washington, thence to Cincinnati, from which point a day's tour is to be made among the homes of the trotters in Kentucky, reaching Chicago on the morning of the 16th. This plan offers great inducements in lower rates of passage, special cars for our party and a more thorough reunion of our members. It now rests with the eastern members of our Association to make this plan a success, and the Secretary will be glad to have the names of all candidates for this trip. The greater the number the better the terms. Other advantages of this plan will be announced in a later number of the REVIEW, as we are enabled to calculate on the number going.

It behooves every member of the Association to consider his duty toward the growing West, and its vast number of earnest, hard-working veterinarians, who should to-day be identified with our Association, that its movements may be of more force and power in leading the profession in the United States.

W. HORACE HOSKINS, *Sec'y*,
12 So. 37th St., Philadelphia.

MASSACHUSETTS VETERINARY ASSOCIATION.

The annual meeting of the Massachusetts Veterinary Association was held at Young's Hotel, Boston, April 23, 1890, the President, Austin Peters, M.R. C.V.S. in the chair.

The members present were: Drs. Blackwood, Bryden, Hitchings, Howard, Osgood, Pierce, Peterson, J. S. Saunders, and Winchester. Honorary member: Dr. J. H. Stickney. Visitors: Drs. Becket and Emerson of Boston, and Dr. G. H. Bailey, of Portland, Maine. The minutes of the last meeting were read and accepted.

The election of officers for the ensuing year was then held, resulting as follows:—President, Thomas Blackwood, V.S.; 1st Vice-President, B. D. Pierce, M.R.C.V.S.; 2d Vice-President, Wm. Ferguson, M.R.C.V.S.; Secretary and Treasurer, Austin Peters, M.R.C.V.S.; Executive Committee, F. H. Osgood, M.R.C.V.S., J. S. Saunders, D.V.S., W. Bryden, V.S., D. D. Lee, M.D.V., and Madison Bunker, D.V.S.

Various matters of business were disposed of. It was then decided to discuss the subject of rabies at the next regular meeting, May 28th, Dr. J. F. Winchester to open the discussion, and that Dr. C. P. Lyman, of the Harvard Veterinary School, and Dr. H. C. Ernst, of the Harvard Medical School, be invited to attend and follow Dr. Winchester in the discussion.

Dr. Burr, the Board of Health's meat inspector at the Brighton abattoir, was to have read a paper upon "Meat Inspection," but as he was unable to be present it was voted to defer his paper until he could attend a meeting and read and defend it himself.

The meeting then adjourned to the Association's annual dinner.

AUSTIN PETERS, *Secretary.*

ILLINOIS AND INDIANA VETERINARY MEDICAL ASSOCIATION.

Under this heading is announced a meeting of a number of our friends which will take place on the 4th and 5th of June at Terre Haute, Indiana. The following programme shows that a pleasant time may be anticipated by those who will be fortunate enough to be able to attend.

FIRST DAY, EVENING SESSION.

Address of Welcome, F. C. Danaldson; address by Eugene V. Debs; Paper by W. L. Williams—"The Pathology of Azoturia as suggested by its History and Symptoms." Paper by R. C. Myline—"Surgery of Fistula."

SECOND DAY—MORNING.

Association will visit points of interest, including Fair Grounds and important Stock Farms.

SECOND DAY—AFTERNOON.

Recess for those desiring to attend races.

SECOND DAY—EVENING.

Paper by G. W. Buckner—"Pneumonia." Papers by H. R. Macaulay and A. J. Thompson. Paper by Dr. F. S. Billings—"Swine Plague."

Other papers will be presented, subjects not received.

LONG ISLAND VETERINARY SOCIETY.

A regular meeting of the Long Island Veterinary Society was held on May 21, 1890, at No. 74 Adam Street, the President, Dr. Geo. H. Berns, in the chair. The following members were present: Drs. Berns, Bell, Atchison, Newman, Bowers, Breslin, Buckley, Pendry.

The minutes of the previous meeting were read and approved.

The Board of Censors made no report.

The Committee on Army Legislation reported progress.

The Committee on State Legislation reported progress.

A communication from Dr. John Lindsay, containing his resignation from the Society was read, the reason assigned being inability to attend the meetings of the Society. The Doctor, residing in Huntington, L. I., found it impossible to attend meetings held in Brooklyn. The resignation was accepted and the Secretary instructed to notify the Doctor of the acceptance with the regrets of the members.

The next order of business being reading of papers, Dr. Samuel Atchison read an interesting paper entitled "Professional Training and Ethics," which was generally discussed by the members, after which a vote of thanks was tendered to the essayist.

It was moved by Dr. Pendry and seconded by Dr. Bowers, that the cost of printing reprints of the Proceedings of the Society be held for future consideration. Carried.

It was moved by Dr. Pendry and seconded by Dr. Bell, that the Secretary communicate with the editors of the AMERICAN VETERINARY REVIEW, and *Journal of Comparative Medicine*, notifying them that the paper read at this meeting of the Society would be withheld from publication, as its composition contained matter of a personal nature.

Bills for type-writing of last month's paper ($5.00) and fifty reprints of Proceedings of Society ($6.00) amounting to eleven ($11.00) dollars, were ordered paid.

The Chair appointed as essayist for June meeting Dr. Thos. M. Buckley.

Meetiug then adjourned.

D. S. BRESLIN, D.V.S., *Sec'y.*

CORRESPONDENCE.

GRADUATES AND NON-GRADUATES.

Editor American Veterinary Review:

In a recent edition I notice a very exhaustive article, written by a non-graduate of Illinois, denouncing the movement on the part of the graduates for veterinary legislation. I am one of his weaklings, as he so chooses to call us, and can conceive of several ways in which the graduate could be benefited by legislation on this subject; not that we want to monopolize the whole business and get all the benefit ourselves, but as a source of much greater benefit resulting to the class of men we are working for, viz., the horse owner and stockman. I am located in a town of fifteen hundred inhabitants, surrounded by one of the most productive farming and stock-raising regions in Iowa, which is populated by a class of people that are educated up to the idea that should anything go wrong with any of the stock, call a horse doctor, of which class this town, as might be said of numerous others, has its supply. Farmers and stockmen each have a choice among three or four so-called veterinarians, and measure the ability of such men by the manner in which they wield the dehorn-

ing saw or castrating knife, and the compensation for services, along with the number of years they have been in practice, which will invariably be twenty-five or thirty years, and not less than twenty years, as claimed by them. These men seem to be doing considerable driving over the country, even in the winter season, working with an outfit including library, not exceeding in value ten dollars, a tin medicine case containing probably three or four remedies, a drenching bottle and a jack knife; library consisting of two or three volumes, an ancient issue of the old fashioned *Horse Farrier*, embracing every subject pertaining to veterinary science, boiled down to about four hundred pages, handed down probably from the last two or three generations.

Now as to their charges. One of these "butchers" will drive three or four miles into the country and stay up with a sick horse all night for a dollar and a half or two dollars, then run a live stock insurance business on a small scale on the outside, by taking the case "no cure, no pay," which to several of the less educated class means considerable.

Is there any wonder that we, claiming to be respectable, and wanting to make an honest living practicing veterinary medicine, want legislation on this subject? Could we support a family or pay our board bill (provided we are single), at such proceedings? Could we clothe ourselves in a manner becoming to the profession at such business?—men that the operations, although they may seem trivial to us, such as hypodermic injections, paraceitises thoracis, relieving the bladder by means of the catheter, taking temperature, etc., are entirely foreign to them, and which I honestly believe, if nine-tenths of these so-called veterinarians were asked what the normal temperature of a horse was, he would be entirely ignorant of it.

These men rely upon drugs entirely, using their three or four remedies as a specific for every disease animal flesh is heir to, administering them in nine cases out of ten when they are contraindicated. It is a shame that the poor dumb brute is confined to such surroundings. Is it any wonder legislation is asked for? It is not the design on my part to exaggerate

or misrepresent the true condition of quackery in Iowa. I think my fellow graduates will bear me out in my statements descriptive of the true condition. What can be said of this community, can be said with equal propriety of several communities in Iowa.

Now what we are after is legislation on the subject, to correct the existing conditions—we that have fitted ourselves for the practice of veterinary medicine at a cost, including outfit, of from one to two thousand dollars. Should a law be passed in the State prohibiting none but diploma men from practicing, who would share the greater benefit? It seems plain that the owner of the stock would get his share. In our clamor for a practice act in this State, it is not designed on our part to blot out the non-graduate that has in his possession such extensive libraries consisting of most of the books now published on veterinary science, and has such wonderful success as was alluded to by the author of the article now in question. If he is endowed with ability to read and comprehend them, it is reasonable to think that he is fully competent to take an examination before a Board of Veterinary Examiners, which in all probability would be provided should a practice act pass the Legislature. We want such men among the ranks; we would give you a hearty welcome should you qualify by a test of your knowledge on the subject.

I fear, though, that this class of men would bear a very small proportion to the ones before described in this article. Veterinary science is advancing, probably not as fast as did its sister profession, that of human medicine, but building slowly, advancing little by little on a firm basis. What is building; is it quackery, or is it education? Formerly the reputation of the veterinary surgeon was not one of the best among men. Such a state of affairs does not exist to-day where educated men have taken up the work. Veterinary science is beginning to be recognized as a science among scientific men of other branches of science. If such be true, as we believe it to be, let it be treated respectably. Now to treat it in this manner, let us rid the profession of so many empirics by legislation. It would raise the standard higher, throw out an

inducement for more young men of intellectual worth to enter the profession. It would almost give us an equal footing with the M.D. It has not been many years since they were compelled to put up with quack competitors in this State, but are now enjoying a much better condition of their profession, as a result of a practice act enacted by the Iowa Legislature in '86. Since that time more diploma men in that profession have come into the State and taken up the places occupied by "quacks," making a good lively competition among men that were worthy to be called competitors. We hope ere long to say as much for our profession—before many more meetings of the Legislature to say that we have been sustained in our desires. It might be well to add that we are standing on the merits of our work at present. Were it not for this condition of affairs, we would be compelled to surrender our profession and go at something else.

Respectfully,

J. H. PLATT, D.V.M.,

Montezuma, Ia.

INQUIRY.

FORT WINGATE, NEW MEXICO, April 20, 1890.

Editor of American Veterinary Review,

SIR:—In your valuable journal of this month, is a note on page 35 entitled "Cocaine in Carpel Tenotomy;" I read it, but must confess I do not understand it although I have often seen cocaine (hydrochlorate of cocaine) used as a local anæsthetic.

The author states he injected one ounce (480 grains) of cocaine under the skin; how did he do it? It takes 700 parts of water to dissolve one part of cocaine. What is the dose (hypodermic) of cocaine for a horse? The dose by the *mouth* in man is from one-twentieth to one grain. If the Doctor used the hydrochlorate of cocaine it would take less of the solvent but the value of the injection would at wholesale price be not less than $10.; this, however, may be a matter of no consequence when the surgeon is well paid for his service.

If a two per cent. or four per cent. solution of hydrochlorate of cocaine was used, what good could the surgeon gain from a few drops on the outside? Did they do any good at all? I would be thankful for some information on the above mentioned points, as I am studying veterinary surgery at present.

Hoping you will pardon my liberty, I remain, very respectfully,

Your obedient servant,

W. BAY.

Post Hospital, Fort Wingate, N. M.

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SOUTHERN CALIFORNIA VETERINARY MEDICAL ASSOCIATION.

LOS ANGELES, CAL.

DEAR SIR.—The Southern California Veterinary Medical Association instructed me to forward you a notice of our formation, also a copy of our by-laws. We meet on the first Tuesday of every month. "We are seven" at present: President, Dr. Rowland, D.V.S., Vice-President, Dr. Whittelsey, D.V.S., Treasurer and Secretary, Dr Morrison, D.V.M., Dr. Oliver, V.S., Dr. Pierce, D.V.S., Dr. Blackington, V.S., Dr. Witherspoon, D.V.S.

The society held its first meeting, with Dr. Rowland in the chair, at Los Angeles, Cal., August 6, 1889.

The President addressed the Association, stating its purposes in a few well-chosen remarks, and hoping that the association and interchange of ideas would be of mutual benefit. Dr. Rowland then read a very interesting paper.

The members then took part in the discussion. A general discussion then took place on cases that were interesting that came up in practice.

The meeting then adjourned to meet on the first Tuesday

of each month. I will send you an account of our meetings every month. Should any paper be read of more than usual interest I will send it in full.

Yours truly,

W. D. MORRISON, *Secretary.*

NEWS AND SUNDRIES.

THE EXTERMINATION OF HYDROPHOBIA IN ENGLAND.—In *Nature*, for July 4th, we find an account of a meeting at the Mansion House, London, held July 1st, to discuss the prevention of hydrophobia. The increase of rabies, on the one hand, and, on the other, the efforts of certain coteries to resist the introduction of the Pasteurian methods into England, have caused this rally of the friends of Pasteur. Two letters, among others, were read at the meeting, written by Professor Huxley and M. Pasteur. Huxley's letter characterizes very pungently the opposition of the anti-vivisectionists as coming from a class of people "who prefer that men should suffer rather than rabbits and dogs." His opinion of the value of M. Pasteur's work is positive. He says: "Medicine, surgery, and hygiene have all been powerfully affected by the labors of Pasteur, which have culminated in his method of treating hydrophobic victims." The letter of M. Pasteur, dated as late as June 27th, was read by Sir Henry Roscoe, M.P. It is interesting as giving his latest figures, amounting to nearly seven thousand patients treated. The number, to June 1st, was six thousand nine hundred and fifty, and the deaths were seventy-one. In short, the general mortality has been one per cent., but, if an exception is made of the cases in which hydrophobia had "burst out" before the curative process could be complete, the general mortality is reduced to 0.68 per cent. M. Pasteur assures the English people that they can "stamp out" rabies in their country if the proper measures, which are entirely feasible, are carried out, and he cites to them the fact that Norway, Sweden and Australia are countries where the disease is not known.—*N. Y. Medical Journal.*

NOTICE.

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